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(54) Title: PROCESSES FOR THE PREPARATION OF 2-CHLORO-1,1,1,2,3,3,3-HEPTAFLUOROPROPANE, HEXAFLUORO-
PROPENE AND 1,1,1,2,3,3,3-HEPTAFLUOROPROPANE

(57) Abstract: A process for the preparation of 2-chloro-1,1,1,3,3,3-heptafluoropropane is disclosed which involves (a) contacting a mixture comprising hydrogen fluoride, chlorine, and at least one starting material selected from the group consisting of halopropenes of the formula $CX_3CCl=CX_2$ and halopropanes of the formula the $CX_3CClYCX_3$, wherein each X is independently F or Cl, and Y is H, Cl or F (provided that the number of X and Y which are F totals no more than six) with a chlorofluorination catalyst in a reaction zone to produce a product mixture comprising $CF_3CClFCF_3$, HCl, HF, and underfluorinated halogenated hydrocarbon intermediates. The process is characterized by said chlorofluorination catalyst comprising at least one chromium-containing component selected from (i) a crystalline alpha-chromium oxide where at least 0.05 atom % of the chromium atoms in the alpha-chromium oxide lattice are replaced by nickel, trivalent cobalt or both nickel and trivalent cobalt, provided that no more than 2 atom % of the chromium atoms in the alpha-chromium oxide lattice are replaced by nickel and that the total amount of chromium atoms in the alpha-chromium oxide lattice that are replaced by nickel and trivalent cobalt is no more than 6 atom %, and (ii) a fluorinated crystalline oxide of (i). Also disclosed is a process for the manufacture of a mixture of HFC-227ea and hexafluoropropene by reacting a starting mixture comprising CFC-217ba and hydrogen in the vapor phase at an elevated temperature, optionally in the presence of a hydrogenation catalyst. This process involves preparing the CFC-217ba by the process described above.

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